NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: RSA 482-A/ Env-Wt 100-900

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No. Check No. Amount Initials

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if Mitigation is Required, please refer to the Determine if Mitigation is Required Frequently Asked Question.

Mitigation Pre-Application Meeting Date: Month: __ Day: __ Year: ____

☐ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality that wetland impacts occur within.

ADDRESS: **#371 NH Route 132**			TOWN/CITY: **Northfield**
TAX MAP:	BLOCK:	LOT:	UNIT:
USGS TOPO MAP WATERBODY NAME: **Cross Brook** ☐ NA		STREAM WATERSHED SIZE: **1.76 sq. mi.** ☐ NA	
LOCATION COORDINATES (If known): **43.392744 -71.605593** ☒ Latitude/Longitude ☐			

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

Removal of two 36 inch diameter concrete pipes that are failing and replace the culverts with a single pre-cast 4 foot by 8 foot box culvert with one foot of embedment.

5. SHORELINE FRONTAGE:

☒ NA This does not have shoreline frontage. SHORELINE FRONTAGE:

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the Land Resources Management Web Page.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB **18** - **0154**.

b. ☐ Designated River the project is in ¼ miles of: _____; and date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year: ____

☒ N/A

8. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **Hanscom, Alan**

TRUST / COMPANY NAME: **NHDOT District 3** | MAILING ADDRESS: **2 Sawmill Road**

TOWN/CITY: **Gilford** | STATE: **NH** | ZIP CODE: **03249**

EMAIL or FAX: **603-524-8027** | PHONE: **603-524-6667**

ELECTRONIC COMMUNICATION: By initialing here: AH, I hereby authorize NHDES to communicate all matters relative to this application electronically

9. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME: | MAILING ADDRESS:

TOWN/CITY: | STATE: | ZIP CODE:

EMAIL or FAX: | PHONE:

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically

10. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.: | COMPANY NAME:

MAILING ADDRESS:

TOWN/CITY: | STATE: | ZIP CODE:

EMAIL or FAX: | PHONE:

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically

11. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
Alan G Hanscom	Alan G. Hanscom	3/22/2018

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name legibly	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

Permanent: impacts that will remain after the project is complete.

Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland		☐ ATF	80	☐ ATF
Scrub-shrub wetland		☐ ATF		☐ ATF
Emergent wetland		☐ ATF		☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream		☐ ATF		☐ ATF
Perennial Stream / River	185 / 94	☐ ATF	78 / 9	☐ ATF
Lake / Pond	/	☐ ATF	/	☐ ATF
Bank - Intermittent stream	/	☐ ATF	/	☐ ATF
Bank - Perennial stream / River	127 / 48	☐ ATF	118 / 35	☐ ATF
Bank - Lake / Pond	/	☐ ATF	/	☐ ATF
Tidal water	/	☐ ATF	/	☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland		☐ ATF		☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
TOTAL	312 / 142		276 / 44	

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☒ Minimum Impact Fee: Flat fee of $ 200

☐ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) **588** sq. ft. X $0.20 = **$ 117.60**

Temporary (seasonal) docking structure: _____ sq. ft. X $1.00 = $ _____

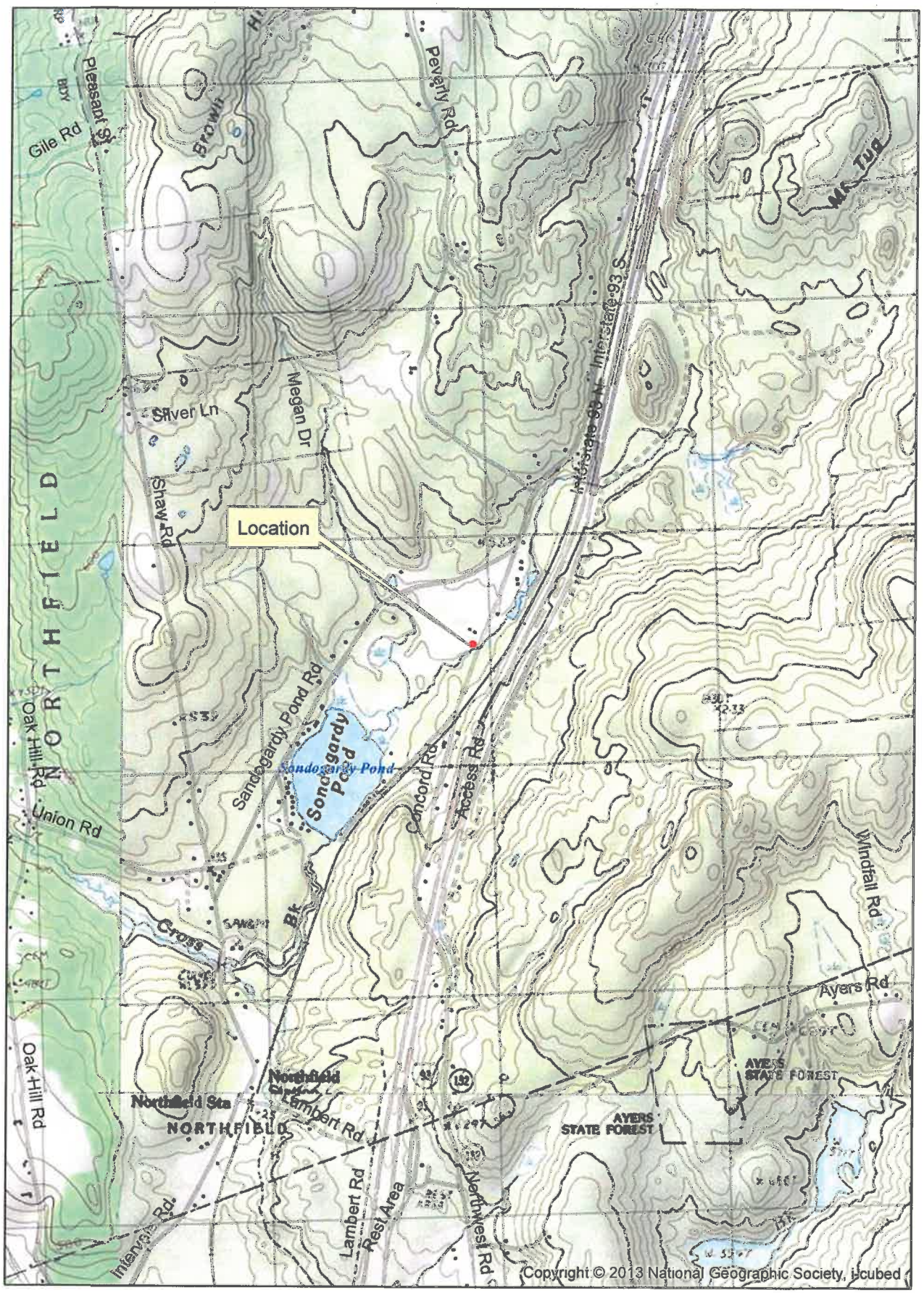
Permanent docking structure: _____ sq. ft. X $2.00 = $ _____

Projects proposing shoreline structures (including docks) add $200 = $ _____

Total = **$ 117.60**

The Application Fee is the above calculated Total or $200, whichever is greater = **$ 200.00**

Northfield 1832H-5



0 0.25 0.5 1 Miles

1:24,000

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

Land Resources Management
Wetlands Bureau

Check the Status of your application: www.des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The proposed project will remove twin 36" concrete pipes and replace them with a single pre-cast 4'x8' box culvert with one foot of embedment carrying Cross Brook under NH Route 132 in Northfield. The pipes are close to failure and a safety concern for the traveling public.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

The proposed alternative is to install a 4 foot by 8 foot pre-cast box culvert with one foot of embedment to replace the 36 inch twin culverts. This size box culvert will pass approximately the same amount of flow as the existing twin 36 inch culverts. This alternative is preferred as it will improve the condition of the structure and improve connectivity, however the proposed box culvert size must be limited to a 4 foot by 8 foot due to the downstream constriction created by the twin 36 inch concete culverts immediately downstream.

3. The type and classification of the wetlands involved.

R2UB12-Riverine, lower perennial, unconsolidated bottom, cobble-gravel, sand

PFO1E-Palustrine, forested, broad -leaved deciduous, seasonally flooded/saturated

Bank

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The crossing carries Cross Brook under NH 132 . The brook passes through a forested area and forested wetlands.

Cross Brook flows into Sandogarty Pond approximately 1500' west of the project area.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The project does not include impacts to prime wetlands, desginated rivers, sand dunes or tidal buffer zones. Cross Brook and the wetlands within the project area are not classified as rare.

6. The surface area of the wetlands that will be impacted.

185 SF of permanent channel impacts

127 SF of permanent bank impacts

46 SF of temporary channel impacts

60 SF of temporary bank impacts

7. The impact on plants, fish and wildlife including, but not limited to:
   a. Rare, special concern species;
   b. State and federally listed threatened and endangered species;
   c. Species at the extremities of their ranges;
   d. Migratory fish and wildlife;
   e. Exemplary natural communities identified by the DRED-NHB; and
   f. Vernal pools.

There should little to no impacts to the items listed - we will maintain flow throughout the project using best management practices.

a. An NHNHB review was requested and the review resulted in a negative result. The project will not impact rare species of special concern.

b. No state listed threatened or endangered species of concern were indicated in the NHNHB review. In addition, an Official Species list was requested and obtained from the USFWS using the IPaC (Information for Planning and Conservation) tool. The Northrern long-eared bat was the only species listed. The project was submitted (on 12/12/16) to the ACOE via the 4(d) Consultation Form resulting in a No Affect determination (1/13/17).

c. No speices were indicated at the extremeties of their ranges in the NHNHB/IPaC review.

d. No migratory fish or or wildlife were idicated in theNHNHB/IPaC review.

e. No exemplary natural communities were identified in the NHNHB review. Cross Brook is listed as Essential Fish Habitat for Atlantic Salmon in Appendix C of the US Army Corps NH Programmatic General Permit. The project was submitted to NOAA via the Essential Fish Habitat Assessment worksheet (3/8/17). It was determined the proposed project would have minimal adverse effect on EFH for Atlantic Salmon and therefor no EFH conservation recommendations are necessary.(3/19/17)

f. No vernal pools were delinated during the field inspections.

8. The impact of the proposed project on public commerce, navigation and recreation.

The project will provide uninterupted public use. The removal and replacement of the culvert will be done one half at a time to allow NH Route 132 to remain open to one way traffic. During construction fishing activities from the banks of the brook will need to occur outside of the construction work zone. The brook is not used for navigation so there will be no impact to navigation.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

There will be no interference with the aesthetic interest of the general public. There will be no visible changes to the roadway or appurtenances.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The proposed project is intended to repair/replace existing infrastructure and will not obstruct public rights of passage or access. During construction at least one lane of alternating traffic will be mainained at all times.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

Approximately 100' downstream of the project there is a second set of twin 36" culverts under the driveway of a private residence. Potential downstream flooding is not anticipated as the size of the replacement box culvert has a comparable water carrying capacity based on hydraulic calculations. The project will include the placement of erosion stone at the inlet and outlet of the box culvert to prevent erosion. This work will not impact upstream and downstream abutting properties.

12. The benefit of a project to the health, safety, and well being of the general public.

The project will benefit the public by reestablishing the integrity of a structure that is necessary to carry NH Route 132 traffic over Cross Brook.

13. The impact of a proposed project on quantity or quality of surface and groundwater. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

This project has been reviewed by the Department's Water Quality Program Manager and it is not expected to have any negative impacts on water quality. Best Management Practices will be used during construction to prevent any adverse effect to water quality during construction. The proposed box culvert will match the volume of flow of the twin 36" culverts so we anticpate no impact to the quality and quantity of either the surface of groundwater.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

It is not anticipated this project will cause an increase in flooding, erosion, or sedimentation. The box culvert has been sized in order to have a comparable water carrying capacity to the existing 36 inch culverts due to an immediate downstream constriction. The box culvert will provide a single opening for water to pass through and the embedment will alow natural materials to settle in within the structure. Barriers to sediment transport will not be installed in the project.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project is not located in a stream which has currents or wave energy strong enough to cause any damage or beyond, nor will the project cause this to occur.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

There are twin 36" pipes approximately 100' downstream from the project. This project is designed to maintain a comparable water carrying capacity thereby not impacting the downstream pipes. This project would not have a cumulative impact if the abutter were permited alterations to the wetland.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

This project will not have an impact on the values and functions of the wetlands. Functions and values of the wetlands will remain the same. Best Management Practices will be used during construction to avoid any adverse effects to wetlands and water quality.

The box culvert installation and single span vs. twin culverts, will correct the perch on the outlet side of the pipe, and increase aquatic organism passage. Since the box will not change the flow volume but will reduce the velocity of the water passing under NH132, we anticpate the velocity of the water to decrease slightly and reduce the likelyhood of erosion or sedimentation.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

The project will cause no impact to any natural landmarks. The project was reviewed by the Cultural Resources Program and it was determined it will not cause impact to any natural landmarks contained in the National Register.

19. The impact upon the value of areas named in acts of Congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

There are no areas named in acts of Congress or presidential proclamations as national rivers, national wilderness, national lakeshores that will be impacted as a result of this project.

20. The degree to which a project redirects water from one watershed to another.

The project does not redirect and water from one watershed to another.

Additional comments

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: March 15th, 2017
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Mark Hemmerlein
Kerry Ryan
Marc Laurin
Rebecca Martin
Jon Evans
Bill Rollins
Steve Johnson
Ralph Sanders
Chris Carucci
Tim Mallette
Joseph Adams
Michael Licciardi
Rita Hunt
Brian Lombard

ACOE
Mike Hicks

NHDES
Gino Infascelli
Lori Sommer

NHF&G
John Magee

NH Natural Heritage Bureau
Amy Lamb
Bob Spoerl

Consultants/Public Participants
Peter Walker
Frank Koczalka
Marty Kennedy
Jennifer Riordan
Nicholas Sceggell
Robert Durfee
Jim Bouchard
Dawn Tuomala
Richard Yarnold
Christian Rainey
Jack Wozmak

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

as improving the land around the bank on the project side of the river by installing a war memorial. He wants to stabilize this eroded area to prevent further damage to infrastructure on his property which surrounds the project area.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Northfield, #1832H-5

Bill Rollins introduced the project. This is the first time this project has been presented at the Natural Resource Agency meeting. The project is located on NH Route 132 approximately 1500' south of Sandogarty Pond Road. The purpose of the project is to replace deteriorated twin 36" culverts with a 4'x8' box culvert (embedded one foot). There is evidence of settling on NH 132 which is also an issue. The age of the culvert is unknown but estimated to be 1950's.

A review of project photos included a driveway crossing with a second set of twin 36" culverts downstream, approximately 100' south of the proposed work area. B. Rollins stated potential downstream flooding is not an issue as the box culvert replacement has a comparable water carrying capacity, based on hydraulic calculations.

Michael Hicks asked if tree cutting of any trees greater than 3 DBH will be included. B. Rollins said no. M. Hicks stated this is Essential Fish Habitat and needs to be coordinated with NOAA. Kerry Ryan stated that coordination with NOAA was complete and no issues were noted. M. Hick stated the project also needs to be reviewed for cultural concerns and Northern Long Eared Bat. K. Ryan indicated the project was reviewed for cultural concerns and by 4(d) rule for NLEB and no issues were noted.

Matt Urban asked if the box culvert will be extended. B. Rollins stated that the current length is 35' and the proposed culvert may increase to 40' and guardrail may also be added. M. Urban asked if an extension would trigger the need to pay for bank and stream impacts. Lori Sommer stated it would need mitigation. B. Rollins stated the construction sequence would be to do half the road at a time because they do not want to shut the road completely because there is no good detour.

Gino Infascelli stated the application/map should also show the second crossing relative to the project area and this can be used as justification in the alternative design form. B. Rollins stated there was quite a bit of storage on the inlet side.

M. Urban asked if it was a Tier 3. K. Ryan stated it was.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting

Tamworth, #40524

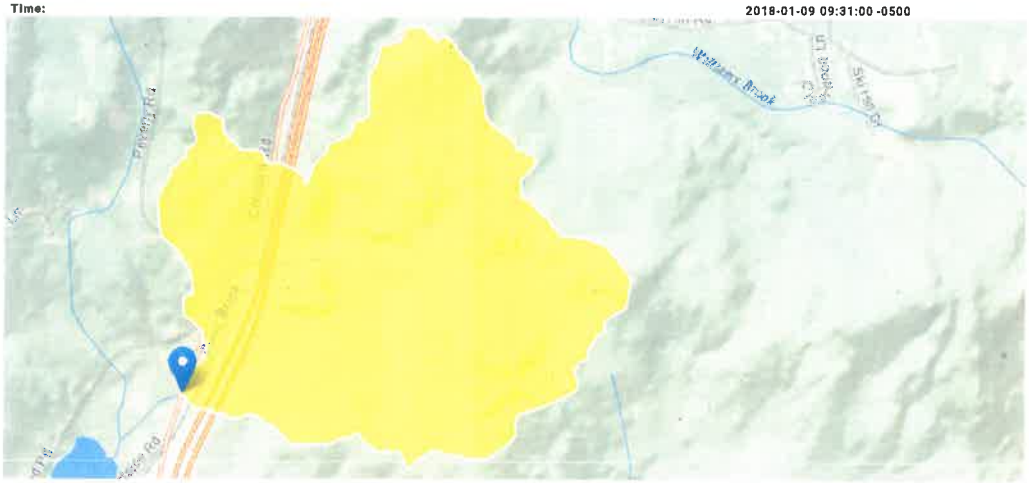
Project Description

The purpose of the project is to repair the abutments, wingwalls, and cut off walls and replace the superstructure of the bridge (Tamworth 095/162). The bridge is currently red-listed.

Steve Johnson presented an overview of the site which is located near the intersection of NH16 and NH113 in Chocorua. The existing structure appears to have a concrete invert which is perched; however, there is a dam located approximately 300 feet upstream that prevents fish passage. Photos of the downstream

StreamStats Report

Region ID:	NH
Workspace ID:	NH20180109143046241000
Clicked Point (Latitude, Longitude):	43.39276, -71.60563
Time:	2018-01-09 09:31:00 -0500



Northfield 1832H-5

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.76	square miles
APRAVPRE	Mean April Precipitation	3.711	inches
WETLAND	Percentage of Wetlands	1.4071	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	118	feet per mi

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.76	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	3.711	inches	2.79	6.23
WETLAND	Percent Wetlands	1.4071	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	118	feet per mi	5.43	543

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SEp	Equiv. Yrs.
2 Year Peak Flood	78.5	ft^3/s	48	128	30.1	3.2
5 Year Peak Flood	133	ft^3/s	80.4	221	31.1	4.7
10 Year Peak Flood	181	ft^3/s	107	306	32.3	6.2
25 Year Peak Flood	247	ft^3/s	141	433	34.3	8
50 Year Peak Flood	303	ft^3/s	168	547	36.4	9
100 Year Peak Flood	370	ft^3/s	198	692	38.6	9.8
500 Year Peak Flood	538	ft^3/s	265	1090	44.1	11

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

Northfield, 1832H-5

Proposed Mitigation Narrative

The Department is proposing to replace existing 36" diameter concrete twin pipes with a pre-cast 4'x8' box culvert with one foot of embedment and extending the outlet and header by 5'.

The Department is proposing a single one-time payment into the arm fund in the amount of $12,136.32.

The proposed impacts consist of

US FWS Wetland Classification	Bank Left	Bank Right	Channel
Bank – outlet / downstream	11 LF	15 LF	11 LF
Bank – inlet / upstream	8 LF	14 LF	8 LF
Through Existing Structure – left pipe			37 LF
Through Existing Structures – right pipe			38 LF
Total bank and channel impacts	19 LF	29 LF	94 LF
Existing rip-rap not requiring mitigation	- 8 LF	- 10 LF	- (37 + 38) LF
Total "NEW" Impacts *(mitigation quantities)	11 LF	19 LF	19L F

At the March 15, 2017 Natural Resource Agency Meeting Lori Sommer indicated that mitigation would be needed due to the stream impacts and extension at the outlet. The project also involves riprap stabilization of the upstream and downstream banks and channels for erosion protection. The Department's plan shows that 8 LF Bank Left and 10 LF Bank Right at the outlet of the structure as having existing rip-rap and that the replacement of rip-rap at these locations does not require mitigation. (This can be seen in the provided photos within the application.) Rip-rap was not identified at the inlet banks (8 LF Bank Left & 14 LF Bank Right) nor channel (8 LF) during the Bureau of Environment's field review. The Department is proposing to pay for these new impacts at the inlet and the new stream impacts along the channel at the outlet (11 LF) through an in-lieu fee payment.

We propose that the new channel creation established as a result of the new alignment and of the larger structure equal the channel impacts through the existing twin pipes and that mitigation not be required for these impacts. The box will be embedded 12" which will improve the alignment of the upstream and downstream channels with the channel through the structure.

That said, the Department is proposing to mitigate for 11 LF of Bank Left, 19 LF of channel, and 19 LF of Bank Right. Using the Arm-Fund calculator this equates to a total of $12,136.32.

NHDES AQUATIC RESOURCE MITIGATION FUND
STREAM PAYMENT CALCULATION

INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL	Right Bank	19.00
	Left Bank	11.0000
	Channel	19.0000
	TOTAL IMPACT	49.0000
	Stream Impact Cost:	$10,113.60
	NHDES Administrative cost:	$2,022.72
*********	TOTAL ARM FUND STREAM PAYMENT********	$12,136.32

NH Department of Transportation
Division of Operations
Project, # 1832H-5
Env-Wt 904.09 Alternative Design
TECHNICAL REPORT

Env-Wt 904.09(a) - If the applicant believes that installing the structure specified in the applicable rule is not practicable, the applicant may propose an alternative design in accordance with this section.

Please explain why the structure specified in the applicable rule is not practicable (Env-Wt 101.69 defines practicable as *available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes.)*

Cross Brook has a drainage area of 1126.4 acres which qualifies this brook as a Tier 3 Crossing. A compliant structure would have a span of 14 feet. Downstream from the existing culvert there is a residential driveway with two 36" culverts that pass Cross Brook under the driveway. To avoid overwhelming these driveway culverts it is necessary to replace the crossing with a structure that matches the flow rate of the existing twin 36" pipes. The proposed 4'x8' box culvert with one foot embedment matches the flow rate of the existing twin 36" pipes and therefore should not have a negative impact on the downstream drive culverts. Due to the limited road cover and need to keep NH132 open to one way traffic, a pre-fabricated pre-cast box structure is the most feasible.

The proposed alternative meets the specific design criteria for Tier 2 and Tier 3 crossings to the *maximum extent practicable*, as specified below.

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings – New Tier 2 stream crossings, replacement Tier 2 crossings that do not meet the requirements of Env-Wt 904.07, and new and replacement Tier 3 crossings shall be designed and constructed:

(a) In accordance with the NH Stream Crossing Guidelines.

The proposed improvements have been developed in accordance with the NH Stream Crossing Guidelines. The Department has considered design alternatives based on the general considerations that take the geomorphic conditions of the stream into account as it relates to the structure. The Department has collected data from the field and in the office to aid in the design of the proposed crossing. Using information that was available, the Department has determined that a full bridge replacement would not be practical. As such, the Department has proposed and alternate design that meets the intent of the stream crossing guidelines to the extent possible.

The replacement single span 4'x8' box culvert will be embedded will remove the perch hydraulics which will improve connectivity and wildlife passage and the single span will reduce the risk of catching debris as the existing twins do.

The proposed structure will maintain the flow depths found in the existing structure.

The existing slope and alignment will be matched.

The existing stream bed bottom is currently a concrete pipe and the proposed streambed bottom will be a natural bottom.

(b) With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing.

Bed forms and stream bed characteristics will match the natural channel found upstream and downstream of the structure. Water depths and velocities within the crossing at a variety of flows will be comparable to the existing depths and velocities. These flows are comparable to those found in the natural channel upstream and downstream of the stream crossing.

(c) To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage.

There is currently a vegetated bank on both sides of the watercourse to allow for wildlife passage, however, not through the structure. The replacement of the twin 36" culverts with a 4'x8' box culvert will not alter the vegetated bank on either side. All bank areas disturbed will be repaired with humus and seeded and stabilized.

(d) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The natural alignment and gradient of the stream channel will be preserved so as to accommodate natural flow regimes. Replacing the twin pipes with a single span structure will improve flow regimes and restore the channel back to a width closer to the brook's bankfull width without allowing too much water through that would cause problems immediately downstream.

(e) To accommodate the 100-year frequency flood, to ensure that (1) there is no increase in flood stages on abutting properties; and (2) flow and sediment transport characteristics will not be affected in a manner which could adversely affect channel stability.

The box culvert was designed to match the existing crossing's flow in order to avoid overwhelming the downstream pipes. It has been designed for a 25-year storm event. There is no history of water overtopping the road at this location.

(f) To simulate a natural stream channel.

6 inch minus stone will be placed on the bottom of the new box, and at the inlet and outlet, and it is anticipated that sediment will accumulate overtime on the stone and will stimulate a natural stream channel.

(g) So as not to alter sediment transport competence.

The installation of an embedded box culvert, in place of the existing skewed twin culverts, will improve sediment transport.

Env-Wt 904.09(c)(3) – The alternative design must meet the general design criteria specified in Env-Wt 904.01:

Env-Wt 904.01
(a) Not be a barrier to sediment transport;

This box culvert will provide a larger waterway opening and will be a single span vs. the existing twin pipes which will be better suited to transport sediments.

(b) Prevent the restriction of high flows and maintain existing low flows;

Due to downstream restrictions, the proposed structure will provide a similar hydraulic capacity to that of the existing pipes. This will not further restrict high flows and will maintain existing low flows. The box will be embedded and channels elevations will remain the same.

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;

The new box culvert will be embedded and eliminate the existing downstream perch which will improve aquatic life passage.

(d) Not cause an increase in the frequency of flooding or overtopping of banks;

This project was designed to match the flow rate of the existing culvert in order to not overwhelm the twin downstream culverts. This project will not cause an increase in the frequency of flooding or overtopping of banks as it passes the same flow volume as the existing twin culverts but flow will pass through one structure. Eliminating the twin culverts reduces the potential for debris to clog up/block the inlets which had the potential to cause a backup/impoundment of water which could cause significant damage.

(e) Preserve watercourse connectivity where it currently exists;

The current crossing is perched which interrupts the watercourse connectivity currently.

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The replacement of the twin pipes will eliminate the perch that currently interrupts the water course and by embedding the box the water course will be better connected with the stream above and below the crossing. Eliminating the perch and allowing natural stream connectivity will benefit AOP.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

This project will not cause erosion, aggradation or scouring upstream or downstream of the crossing. The replacement box culvert was designed to match the flow rate passed by the existing culverts. The existing inlet experiences aggradation; removing the twin culverts and opening the bankfull width to the single span box will reduce this issue.

(h) Not cause water quality degradation.

This project will not cause water quality degradation. The replacement box culvert was designated to match the flow rate passed by the existing culvert and will maintain water quality. BMP's will be used during construction to protect against water degradation.

*****Note: An alternative design for <u>Tier 1</u> stream crossings must meet the general design criteria (Env-Wt 904.01) only to the *maximum extent practicable*.**

(new Subcat)

4' x 8' Box Culvert

1R

Twin 36 inch culverts

Subcat Reach Pond Link

Routing Diagram for NH 132 - Twin Culverts
Prepared by NH DOT, Printed 3/19/2018

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: (new Subcat) Runoff Area=1,126.400 ac 0.00% Impervious Runoff Depth>0.63"
Flow Length=10,084' Slope=0.1068 '/' Tc=99.1 min CN=63 Runoff=249.18 cfs 59.485 af

Reach 1R: Twin 36 inch culverts Avg. Flow Depth=0.00' Max Vel=0.00 fps
36.0" Round Pipe x 2.00 n=0.013 L=36.0' S=0.0386 '/' Capacity=262.12 cfs Outflow=0.00 cfs 0.000 af

Reach 5R: 4' x 8' Box Culvert Avg. Flow Depth=3.08' Max Vel=10.13 fps Inflow=249.18 cfs 59.485 af
n=0.030 L=40.0' S=0.0200 '/' Capacity=240.81 cfs Outflow=249.11 cfs 59.476 af

Total Runoff Area = 1,126.400 ac Runoff Volume = 59.485 af Average Runoff Depth = 0.63"
100.00% Pervious = 1,126.400 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: (new Subcat)

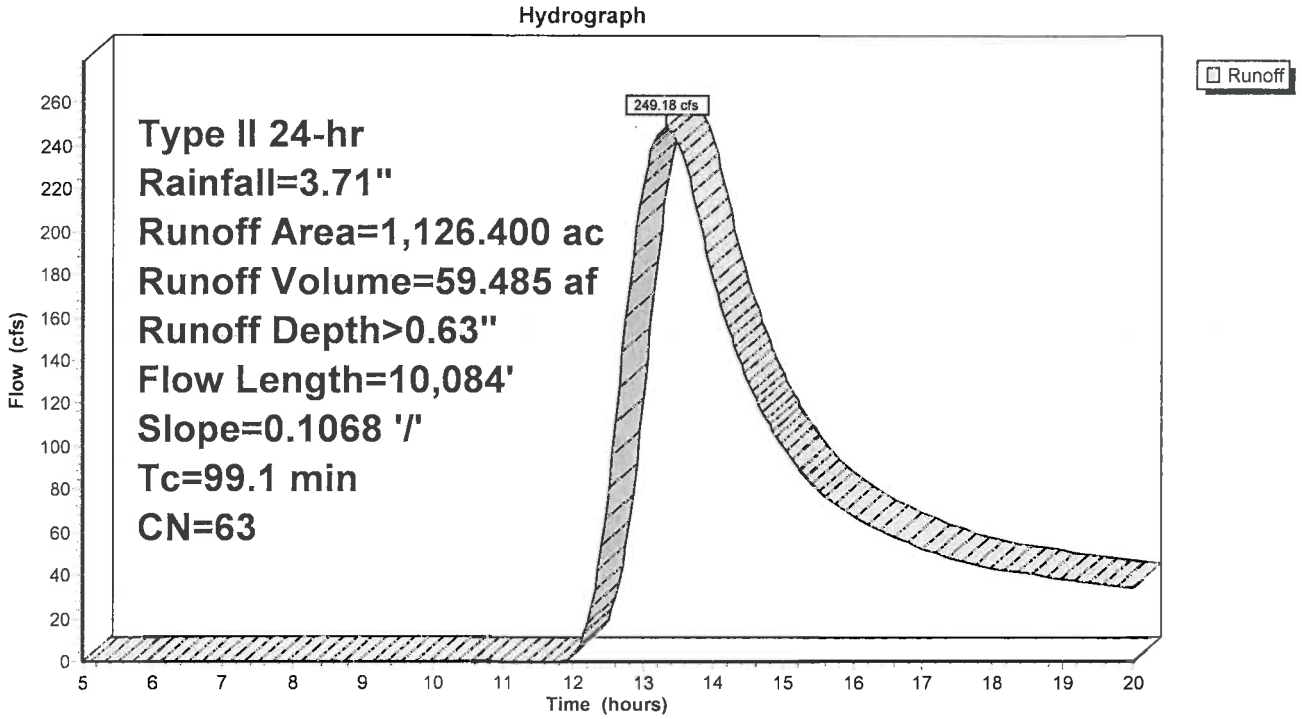
Runoff = 249.18 cfs @ 13.32 hrs, Volume= 59.485 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr Rainfall=3.71"

	Area (ac)	CN	Description
*	1,126.400	63	
	1,126.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.1	10,084	0.1068	1.70		**Lag/CN Method,**

Subcatchment 3S: (new Subcat)

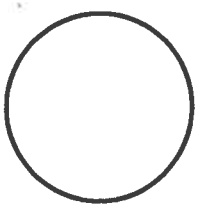


Summary for Reach 1R: Twin 36 inch culverts

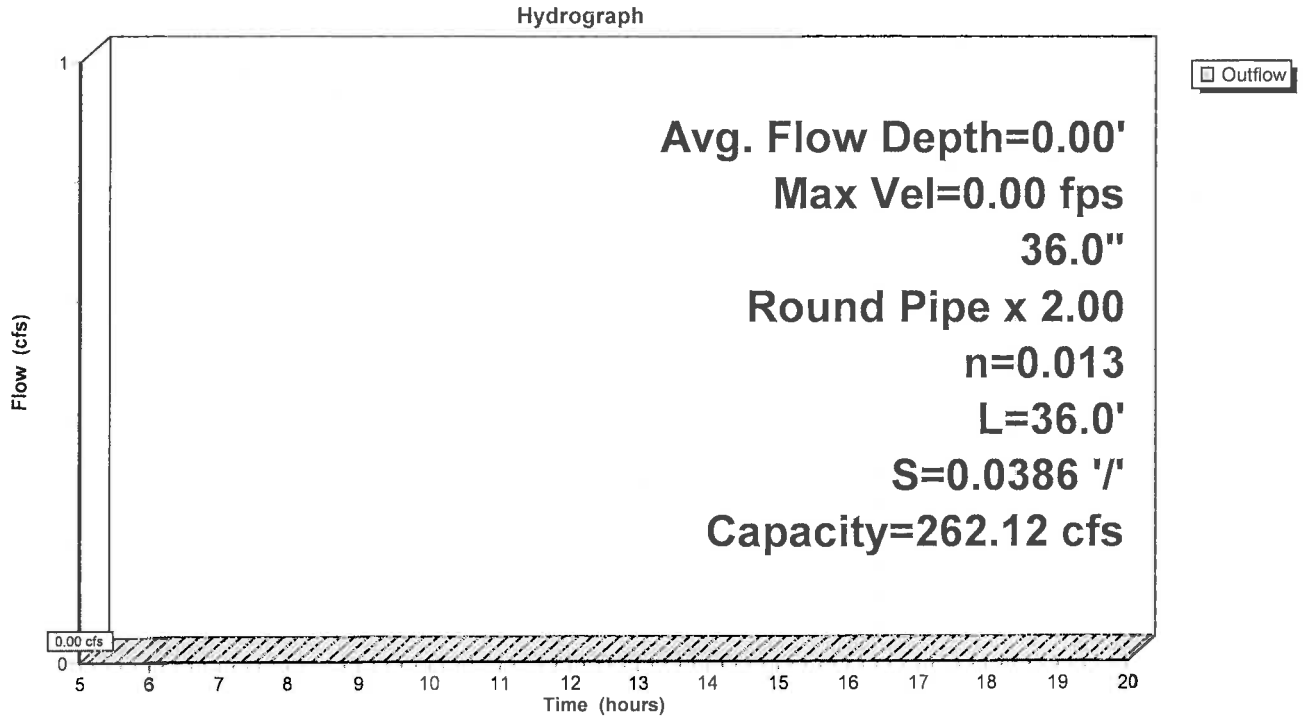
[43] Hint: Has no inflow (Outflow=Zero)

Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 262.12 cfs

A factor of 2.00 has been applied to the storage and discharge capacity
36.0" Round Pipe
n= 0.013 Concrete pipe, straight & clean
Length= 36.0' Slope= 0.0386 '/'
Inlet Invert= 419.70', Outlet Invert= 418.31'



Reach 1R: Twin 36 inch culverts



Summary for Reach 5R: 4' x 8' Box Culvert

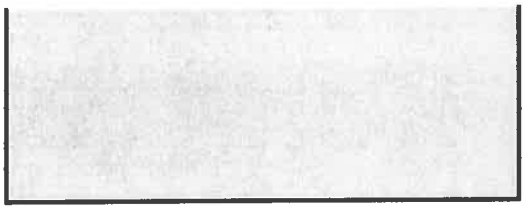
[91] Warning: Storage range exceeded by 0.08'
[55] Hint: Peak inflow is 103% of Manning's capacity

Inflow Area = 1,126.400 ac, 0.00% Impervious, Inflow Depth > 0.63"
Inflow = 249.18 cfs @ 13.32 hrs, Volume= 59.485 af
Outflow = 249.11 cfs @ 13.32 hrs, Volume= 59.476 af, Atten= 0%, Lag= 0.3 min

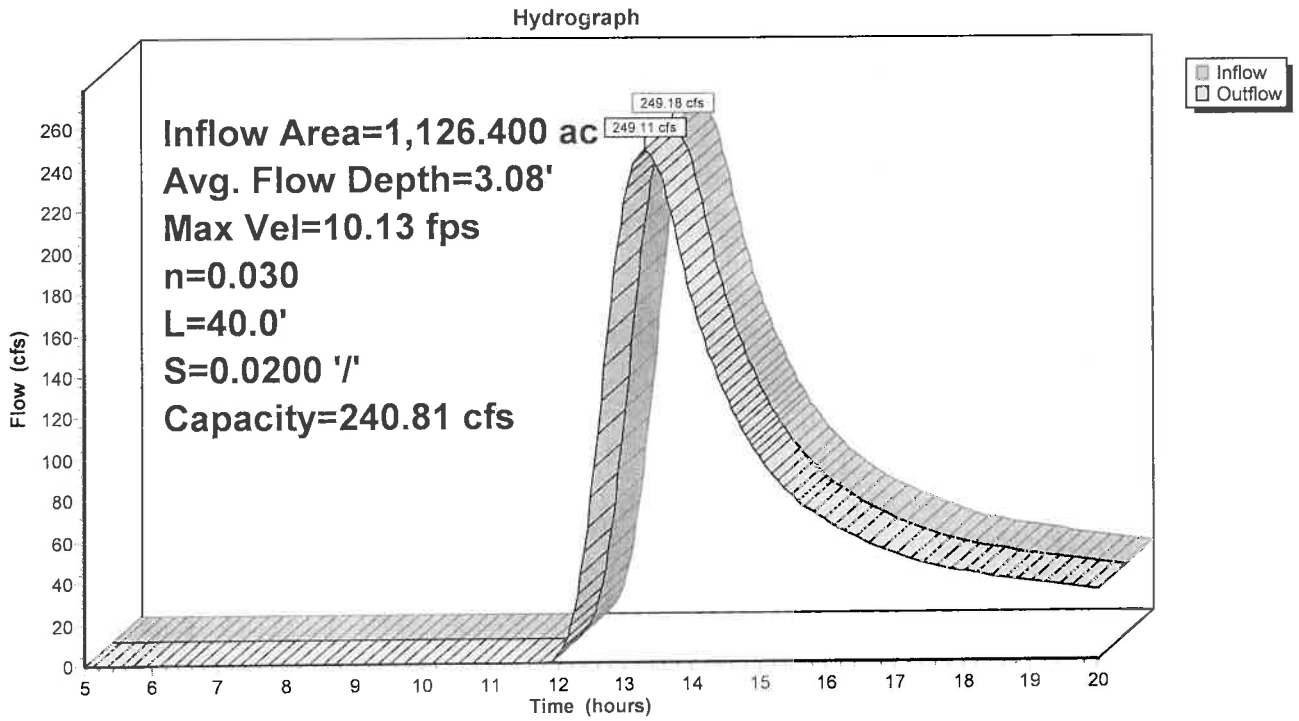
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.13 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.74 fps, Avg. Travel Time= 0.1 min

Peak Storage= 984 cf @ 13.32 hrs
Average Depth at Peak Storage= 3.08'
Bank-Full Depth= 3.00' Flow Area= 24.0 sf, Capacity= 240.81 cfs

8.00' x 3.00' deep channel, n= 0.030 Stream, clean & straight
Length= 40.0' Slope= 0.0200 '/'
Inlet Invert= 419.50', Outlet Invert= 418.70'



Reach 5R: 4' x 8' Box Culvert



New Hampshire Natural Heritage Bureau

To: Kerry Ryan
7 Hazen Drive
Concord, NH 03301

Date: 1/9/2018

From: NH Natural Heritage Bureau

Re: Review by NH Natural Heritage Bureau of request dated 1/9/2018

NHB File ID: NHB18-0154

Applicant: Kerry Ryan

Location: Tax Map(s)/Lot(s):
Northfield

Project Description: This is a culvert replacement project located on NH 132 in Northfield, approximately 1500' south of Sandogarty Pond Road. This project will replace tow 36" concrete culverts with on 4x8 box culvert.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

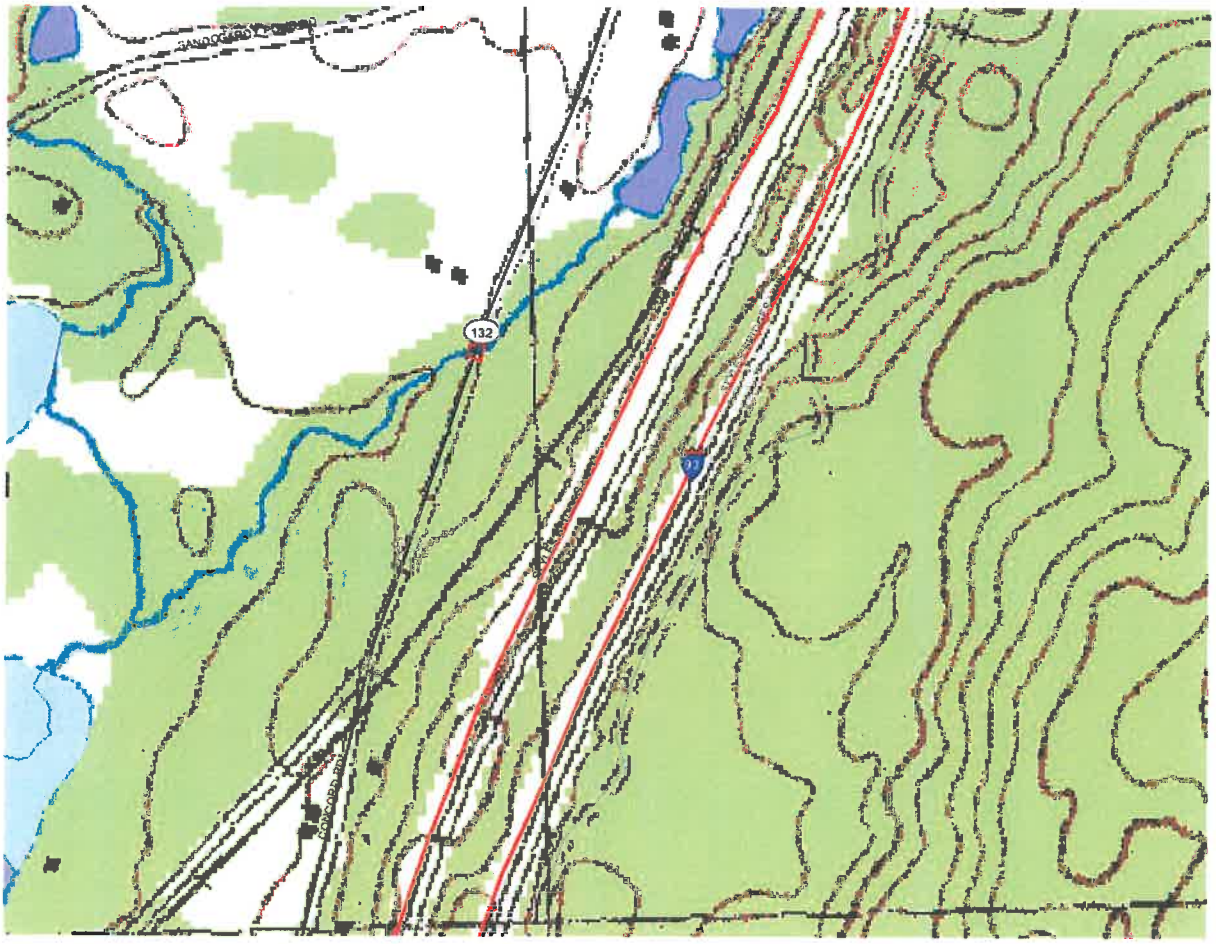
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

This report is valid through 1/8/2019.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301

MAP OF PROJECT BOUNDARIES FOR NHB FILE ID: NHB18-0154



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Road
Concord NH 03301

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2017-SLI-0290
Event Code: 05E1NE00-2018-E-01219
Project Name: Northfield Culvert 1832H

December 14, 2017

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-0290

Event Code: 05E1NE00-2018-E-01219

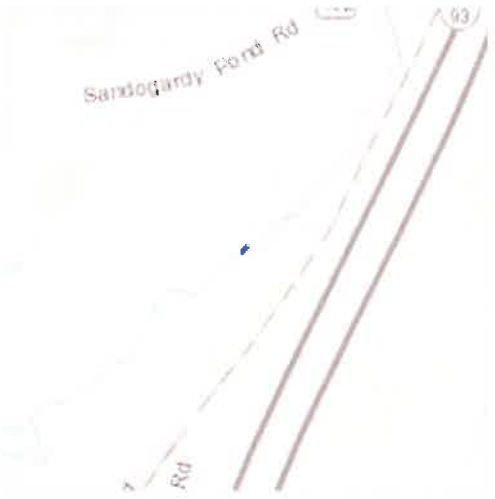
Project Name: Northfield Culvert 1832H

Project Type: TRANSPORTATION

Project Description: Project location is NH132, approximately 1500' south of Sandogarty Pond Road. The purpose to replace twin 36" culvert pipes with a single box culvert (4x6).

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/43.392805725964365N71.60555357687062W



Counties: Merrimack, NH

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

IPaC Official Species List Consultation Code: 05E1NE00-2017-SLI-0290

Information to Determine 4(d) Rule Compliance:	**YES**	**NO**
1. Does the project occur wholly outside of the WNS Zone[1]?	☐	☒
2. Have you contacted the appropriate agency[2] to determine if your project is near known hibernacula or maternity roost trees?	☒	☐
3. Could the project disturb hibernating NLEBs in a known hibernaculum?	☐	☒
4. Could the project alter the entrance or interior environment of a known hibernaculum?	☐	☒
5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?	☐	☒
6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through **July 31**.	☐	☒

You are eligible to use this form if you have answered yes to question #1 **or** yes to question #2 **and** no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

Agency and Applicant[3] (Name, Email, Phone No.): NHDOT, Kerry Ryan, kryan@dot.state.nh.us, 603-271-3717

Project Name: Northfield 1832H-5

Project Location (include coordinates if known): NH132 in Northfield, approximately 1500' south of Sandogardy Pond Road, (43.2332441, -71.3626841)

Basic Project Description (provide narrative below or attach additional information): This project involves replacing two failing 36" diameter concrete culverts with a single box culvert (4' high by 6' wide).

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[1] http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf

[2] See http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html

[3] If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

General Project Information	YES	NO
Does the project occur within 0.25 miles of a known hibernaculum?	☐	☒
Does the project occur within 150 feet of a known maternity roost tree?	☐	☒
Does the project include forest conversion[4]? (if yes, report acreage below)	☒	☐
Estimated total acres of forest conversion		
If known, estimated acres[5] of forest conversion from April 1 to October 31	<0.10	
If known, estimated acres of forest conversion from June 1 to July 31[6]		
Does the project include timber harvest? (if yes, report acreage below)	☐	☒
Estimated total acres of timber harvest		
If known, estimated acres of timber harvest from April 1 to October 31		
If known, estimated acres of timber harvest from June 1 to July 31		
Does the project include prescribed fire? (if yes, report acreage below)	☐	☒
Estimated total acres of prescribed fire		
If known, estimated acres of prescribed fire from April 1 to October 31		
If known, estimated acres of prescribed fire from June 1 to July 31		
Does the project install new wind turbines? (if yes, report capacity in MW below)	☐	☒
Estimated wind capacity (MW)		

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: Kerry Ryan Date Submitted: 12/12/16

[4] Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).
[5] If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.
[6] If the activity includes tree clearing in June and July, also include those acreage in April to October.

Ryan, Kerry

From: Hicks, Michael C CIV USARMY CENAE (US) <Michael.C.Hicks@usace.army.mil>
Sent: Friday, January 13, 2017 2:25 PM
To: Ryan, Kerry
Subject: RE: Meredith 1832H-4 and Northfield 1832H-5

Kerry,

On 1832H-4, is was determined there will be No Affect to the NLEB and on 1832H-5 the 30 day clock expired today on coordination with the USFWS (we started coordination on 12/13). We should be all set on these issues. Let me know when the DES issues so we can be on the look-out for theirauthorizations.

Thanks,
Mike

Michael Hicks, PM
USACE, REG DIV., BR. C
978-318-8157

-----Original Message-----
From: Ryan, Kerry [mailto:Kerry.Ryan@dot.nh.gov]
Sent: Friday, January 13, 2017 1:13 PM
To: Hicks, Michael C CIV USARMY CENAE (US) <Michael.C.Hicks@usace.army.mil>
Subject: [EXTERNAL] Meredith 1832H-4 and Northfield 1832H-5

Good Afternoon Mike,

I was looking to get a status on the subject projects submitted to you 12/2016. These projects were for review by the Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form. The projects are anticipated to be presented at the Natural Resource Agency meeting in March. Please let me know if there is any other information I can provide.

Thank You,

Kerry Ryan

NH Department of Transportation

Bureau of Environment

7 Hazen Drive, Concord, NH 03302

Ph: 603-271-3717

Ryan, Kerry

From: Mike R Johnson - NOAA Federal <mike.r.johnson@noaa.gov>
Sent: Thursday, March 09, 2017 4:48 PM
To: Ryan, Kerry
Subject: Re: NHDOT Project-Northfield 1832H-5

Kerry,

Based upon the information in the EFH assessment, we have determined that the proposed project would have minimal adverse effect on EFH for Atlantic salmon. In addition, the project area will have minimal effects on other NOAA-trust resources, including those covered under the Fish and Wildlife Coordination Act. Therefore, we have no EFH conservation recommendations to provide to you for this action pursuant to Section 305(b)(4)(A) of the Magnuson-Stevens Act.

Thanks,

Mike

On Wed, Mar 8, 2017 at 8:52 AM, Ryan, Kerry <Kerry.Ryan@dot.nh.gov> wrote:

Good Morning Mike,

Please find attached the *EFH Assessment Worksheet*, wetland impact plans and wetland impact summary table for the subject project. Please let me know if any additional information is needed.

Thank You,

Kerry Ryan

NH Department of Transportation

Bureau of Environment

7 Hazen Drive, Concord, NH 03302

Ph: 603-271-3717

Fax: 603-271-7199

From: Mike R Johnson - NOAA Federal [mailto:mike.r.johnson@noaa.gov]
Sent: Tuesday, November 29, 2016 9:54 AM
To: Ryan, Kerry
Subject: Re: NHDOT Project-Northfield 1832H-5

Kerry,

Based upon your description I don't think I would have concerns about the project's impact on Atlantic salmon EFH. However, if the project has an adverse effect on EFH, and adverse effect is defined as "any impact which reduces the quality and/or quantity of essential fish habitat", the action agency should prepare an EFH assessment. We can't arbitrarily decide which project needs an EFH assessment, if that trigger is met. However, the content, length, detail, etc. of an EFH assessment should be commensurate with the potential effect, so this shouldn't be a heavy lift.

I would recommend that you include the information you provided in your email, describe the habitat and conditions at the site, the measures the agency will take to reduce the impact, and a determination of the effect. You can use the EFH assessment worksheet, if you like (https://www.greateratlantic.fisheries.noaa.gov/habitat/efh/assessworksheetfinal.pdf). Send it to me and I will reply ASAP.

Let me know if you have any questions.

Mike

On Tue, Nov 29, 2016 at 9:15 AM, Ryan, Kerry <Kerry.Ryan@dot.nh.gov> wrote:

Good Morning Mike,

The subject project is a culvert replacement project located on NH 132, approximately 1500 feet south of Sandogardy Pond Road, in Northfield. The project will replace existing failing 36" diameter concrete culverts with a box culvert. The pre-cast box culvert replacement is anticipated to be 4' high (one foot embedded) by 5' wide.. All work will take place within the existing State right-of-way.

The culverts carry Cross Brook under NH132. As Cross Brook is listed as Essential Fish Habitat, I am writing to inquire whether you have any concerns with the proposed project. I have attached a project location map and

a topo map for reference. Please let me know if you have any concerns or if there is any other information I can provide.

Thank You,

Kerry Ryan

NH Department of Transportation

Bureau of Environment

7 Hazen Drive, Concord, NH 03302

Ph: 603-271-3717

Fax: 603-271-7199

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Michael R. Johnson

U.S. Department of Commerce
NOAA Fisheries
Greater Atlantic Regional Fisheries Office
(formerly, Northeast Regional Office)
Habitat Conservation Division
55 Great Republic Drive
Gloucester, MA 01930
978-281-9130

mike.r.johnson@noaa.gov

http://www.greateratlantic.fisheries.noaa.gov/

NOAA FISHERIES
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
Essential Fish Habitat (EFH) Consultation Guidance
EFH ASSESSMENT WORKSHEET

Introduction:

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates that federal agencies conduct an essential fish habitat (EFH) consultation with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken that may adversely affect EFH. An adverse effect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

This worksheet has been designed to assist in determining whether a consultation is necessary and in preparing EFH assessments. This worksheet should be used as your EFH assessment or as a guideline for the development of your EFH assessment. At a minimum, all the information required to complete this worksheet should be included in your EFH assessment. If the answers in the worksheet do not fully evaluate the adverse effects to EFH, we may request additional information in order to complete the consultation.

An expanded EFH assessment may be required for more complex projects in order to fully characterize the effects of the project and the avoidance and minimization of impacts to EFH. While the EFH worksheet may be used for larger projects, the format may not be sufficient to incorporate the extent of detail required, and a separate EFH assessment may be developed. However, regardless of format, the analysis outlined in this worksheet should be included for an expanded EFH assessment, along with additional information that may be necessary. This additional information includes:

- the results of on-site inspections to evaluate the habitat and site-specific effects
- the views of recognized experts on the habitat or the species that may be affected
- a review of pertinent literature and related information
- an analysis of alternatives to the action that could avoid or minimize the adverse effects on EFH.

Your analysis of adverse effects to EFH under the MSA should focus on impacts to the habitat for all life stages of species with designated EFH, rather than individual responses of fish species. Fish habitat includes the substrate and benthic resources (e.g., submerged aquatic vegetation, shellfish beds, salt marsh wetlands), as well as the water column and prey species.

Consultation with us may also be necessary if a proposed action results in adverse impacts to other NOAA-trust resources. Part 6 of the worksheet is designed to help assess the effects of the action on other NOAA-trust resources. This helps maintain efficiency in our interagency coordination process. In addition, further consultation may be required if a proposed action impacts marine mammals or threatened and endangered species for which we are responsible. Staff from our Greater Atlantic Regional Fisheries Office, Protected

Resources Division should be contacted regarding potential impacts to marine mammals or threatened and endangered species.

Instructions for Use:

Federal agencies must submit an EFH assessment to NOAA Fisheries as part of the EFH consultation. Your EFH assessment must include:

1) A description of the proposed action.
2) An analysis of the potential adverse effects of the action on EFH, and the managed species.
3) The federal agency's conclusions regarding the effects of the action on EFH.
4) Proposed mitigation if applicable.

In order for this worksheet to be considered as your EFH assessment, you must answer the questions in this worksheet fully and with as much detail as available. Give brief explanations for each answer.

Federal action agencies or the non-federal designated lead agency should submit the completed worksheet to NOAA Fisheries Greater Atlantic Regional Fisheries Office, Habitat Conservation Division (HCD) with the public notice or project application. Include project plans showing existing and proposed conditions, all waters of the U.S. on the project site, with mean low water (MLW), mean high water (MHW), high tide line (HTL), and water depths clearly marked and sensitive habitats mapped, including special aquatic sites (submerged aquatic vegetation, saltmarsh, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges), hard bottom habitat areas and shellfish beds, as well as any available site photographs.

For most consultations, NOAA Fisheries has 30 days to provide EFH conservation recommendations once we receive a complete EFH assessment. Submitting all necessary information at once minimizes delays in review and keeps review timelines consistent. Delays in providing a complete EFH assessment can result in our consultation review period extending beyond the public comment period for a particular project.

The information contained on the HCD website (http://www.greateratlantic.fisheries.noaa.gov/habitat/) will assist you in completing this worksheet. The HCD website contains information regarding: the EFH consultation process; Guide to EFH Designations which provides a geographic species list; Guide to EFH Species Descriptions which provides the legal description of EFH as well as important ecological information for each species and life stage; and other EFH reference documents including examples of EFH assessments and EFH consultations.

Our website also includes a link to the NOAA EFH Mapper (http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html). We would note that the EFH Mapper is currently being updated and revised. Should you use the EFH Mapper to identify federally managed species with designated EFH in your project area, we recommend checking this list against the Guide to Essential Fish Habitat Designations in the Northeast (http://www.greateratlantic.fisheries.noaa.gov/hcd/index2a.htm) to ensure a complete and accurate list is provided.

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (modified 3/2016)

PROJECT NAME: Northfield

DATE: 03/07/2017

PROJECT NO.: 1832H-5

LOCATION (Water body, county, physical address): Cross Brook, Merrimack County, NH Route 132 approximatel

PREPARER: Kerry Ryan

Step 1: Use the Habitat Conservation Division EFH webpage's Guide to Essential Fish Habitat Designations in the Northeastern United States to generate the list of designated EFH for federally-managed species for the geographic area of interest (http://www.greateratlantic.fisheries.noaa.gov/hcd/index2a.htm). Use the species list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. The list can be included as an attachment to the worksheet. Make a preliminary determination on the need to conduct an EFH consultation.

1. INITIAL CONSIDERATIONS		
EFH Designations	**Yes**	**No**
Is the action located in or adjacent to EFH designated for eggs? List the species: Atlantic salmon	✓	
Is the action located in or adjacent to EFH designated for larvae? List the species: Atlantic salmon	✓	
Is the action located in or adjacent to EFH designated for juveniles? List the species: Atlantic salmon	✓	
Is the action located in or adjacent to EFH designated for adults or spawning adults? List the species: Atlantic salmon	✓	
If you answered no to all questions above, then EFH consultation is not required - go to Section 5. If you answered yes to any of the above questions proceed to Section 2 and complete remainder of the worksheet.		

Step 2: In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Identify the sources of the information provided and provide as much description as available. These should not be yes or no answers. Please note that there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts. Project plans that show the location and extent of sensitive habitats, as well as water depths, the HTL, MHW and MLW should be provided.

2. SITE CHARACTERISTICS

Site Characteristics	Description
Is the site intertidal, sub-tidal, or water column?	The site consists of the channel and banks of Cross Brook in Northfield, NH.
What are the sediment characteristics?	Sand and boulder.
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the SAV species and spatial extent.	There is no submerged aquatic vegetation in the project area.
Are there wetlands present on or adjacent to the site? If so, describe the spatial extent and vegetation types.	There is a palustrine forested wetland adjacent to the project area (PFO1E).
Is there shellfish present at or adjacent to the project site? If so, please describe the spatial extent and species present.	Shellfish were not observed within the project area.
Are there mudflats present at or adjacent to the project site? If so please describe the spatial extent.	Mudflats are not present in or adjacent to the project site.
Is there rocky or cobble bottom habitat present at or adjacent to the project site? If so, please describe the spatial extent.	A stream crossing assessment was completed for this project. During this assessment the bottom habitat was determined to be 85% sand and 15% boulder.
Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so for which species, what type habitat type, size, characteristics?	Habitat Area of Particular Concern is not designated at or near this site.
What is the typical salinity, depth and water temperature regime/range?	Cross Brook is a freshwater brook.
What is the normal frequency of site disturbance, both natural and man-made?	Disturbance at the site includes natural disturbances such as flooding, which may cause some channel scour and debris movement.

What is the area of proposed impact (work footprint & far afield)?	This project will replace twin 36" culverts with a 4' high by 8' wide, 1 foot embedded box culvert. This will require 151 sf of bank impacts and 436 sf of permanent impacts. The road over the work area will be removed and reconstructed.

Step 3: This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS

Impacts	Y	N	Description
Nature and duration of activity(s). Clearly describe the activities proposed and the duration of any disturbances.			This project is anticipated to take two weeks with the following time line: 1. The road needs to remain open to one way traffic so removal and replacement of the existing culvert will be done one half at a time. 2. Install temporary erosion control measures
Will the benthic community be disturbed? If no, why not? If yes, describe in detail how the benthos will be impacted.	✓		The benthic community has the potential to be disturbed temporarily when the exiting culverts are removed and replaced with the box culvert.
Will SAV be impacted? If no, why not? If yes, describe in detail how the SAV will be impacted. Consider both direct and indirect impacts. Provide details of any SAV survey conducted at the site.		✓	There is believed to be no submerged aquatic vegetation within the project area.
Will salt marsh habitat be impacted? If no, why not? If yes, describe in detail how wetlands will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?		✓	No, salt marsh habitat is not present within the project area.
Will mudflat habitat be impacted? If no, why not? If yes, describe in detail how mudflats will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?		✓	No, mudflat habitat is not present within the project area.
Will shellfish habitat be impacted? If so, provide in detail how the shellfish habitat will be impacted. What is the aerial extent of the impact?		✓	No, shellfish not present within the project area.

Provide details of any shellfish survey conducted at the site.	☐	☐	N/A
Will hard bottom (rocky, cobble, gravel) habitat be impacted at the site? If so, provide in detail how the hard bottom will be impacted. What is the aerial extent of the impact?	☐	☑	The substrate of Cross Brook in the project area is predominately sand.
Will sediments be altered and/or sedimentation rates change? If no, why not? If yes, describe how.	☐	☑	No, this project will not result in changes to sedimentation or sedimentation rates. With the implementation of a Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices sediments and sedimentation will only minimally be
Will turbidity increase? If no, why not? If yes, describe the causes, the extent of the effects, and the duration.	☐	☑	No, an increase in turbidity is not anticipated. With the implementation of a SWPPP and appropriate Best Management Practices, turbidity will not increase beyond acceptable levels during or following construction.
Will water depth change? What are the current and proposed depths?	☐	☑	No, water depth will not change as a result of this project.
Will contaminants be released into sediments or water column? If yes, describe the nature of the contaminants and the extent of the effects.	☐	☑	No, contaminants will not be released into sediments or water column. With the implementation of a SWPPP and appropriate BMP's, contaminant releases will be minimized during construction. Construction debris will be prevented from falling into the water.
Will tidal flow, currents, or wave patterns be altered? If no, why not? If yes, describe in detail how.	☐	☑	The only change in Cross Brook will be the replacement of twin 36" culverts with a 4'x8' box culvert. This sized box culvert will duplicate the flow volume of the twin pipes. Therefore, currents are not anticipated to be altered.
Will water quality be altered? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration of the impact.	☐	☑	No, water quality will not be altered. Work will be completed with the use of a SWPPP and construction BMP's to prevent alterations to the water quality.
Will ambient noise levels change? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration and degree of impact.	☑	☐	Ambient noise may increase temporarily during active construction. The project is anticipated to take two weeks (10 working days). Ambient noise levels will not be increased permanently.

Does the action have the potential to impact prey species of federally managed fish with EFH designations?	✓		This project may temporarily impact prey species, Impacts are not anticipated following the completion of the project.

Step 4: This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species (from the list generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. The Guide to EFH Descriptions webpage (http://www.greateratlantic.fisheries.noaa.gov/hcd/list.htm) should be used during this assessment to determine the ecological parameters/preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	**Y**	**N**	**Describe habitat type, species and life stages to be adversely impacted**
Will functions and values of EFH be impacted for:			
Spawning **If yes, describe in detail how, and for which species. Describe how adverse effects will be avoided and minimized.**		✓	
Nursery **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**		✓	
Forage **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**		✓	
Shelter **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**		✓	

Will impacts be temporary or permanent? Describe the duration of the impacts.			Project impacts will be temporary. Following construction, the ambient noise, substrate and flow volume of the brook will remain unchanged.
Will compensatory mitigation be used? If no, why not? Describe plans for mitigation and how this will offset impacts to EFH. Include a conceptual compensatory mitigation plan, if applicable.	☐	✓	

Step 5: This section provides the federal agency's determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

Please note: if information provided in the worksheet is insufficient to allow NOAA Fisheries to complete the EFH consultation additional information will be requested.

5. DETERMINATION OF IMPACT		
	/	**Federal Agency's EFH Determination**
Overall degree of adverse effects on EFH (not including compensatory mitigation) will be: **(check the appropriate statement)**	☐	**There is no adverse effect on EFH or no EFH is designated at the project site.** **EFH Consultation is not required**
	✓	**The adverse effect on EFH is not substantial. This means that the adverse effects are either no more than minimal, temporary, or that they can be alleviated with minor project modifications or conservation recommendations.** **This is a request for an abbreviated EFH consultation.**
	☐	**The adverse effect on EFH is substantial.** **This is a request for an expanded EFH consultation**

Step 6: Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as part of the Fish and Wildlife Coordination Act Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
Species known to occur at site (list others that may apply)	**Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat). Please note, impacts to federally listed species of fish, sea turtles, and marine mammals must be coordinated with the GARFO Protected Resources Division.**
alewife	
American eel	
American shad	
Atlantic menhaden	
blue crab	
blue mussel	
blueback herring	
Eastern oyster	
horseshoe crab	
quahog	
soft-shell clams	
striped bass	
other species:	

Useful Links

National Wetland Inventory Maps
http://www.fws.gov/wetlands/

EPA's National Estuaries Program
http://www.epa.gov/nep/information-about-local-estuary-programs

Northeast Regional Ocean Council (NROC) Data Portal
http://www.northeastoceandata.org/

Mid-Atlantic Regional Council on the Ocean (MARCO) Data Portal
http://portal.midatlanticocean.org/

Resources by State:

Maine
Eelgrass maps
http://www.maine.gov/dmr/rm/eelgrass/
Maine Office of GIS Data Catalog
http://www.maine.gov/megis/catalog/
Casco Bay Estuary Partnership
http://www.cascobayestuary.org/
Maine GIS Stream Habitat Viewer
http://mapserver.maine.gov/streamviewer/index.html

New Hampshire
New Hampshire's Statewide GIS Clearinghouse, NH GRANIT
http://www.granit.unh.edu/
New Hampshire Coastal Viewer
http://www.granit.unh.edu/nhcoastalviewer/

Massachusetts
Eelgrass maps
http://maps.massgis.state.ma.us/images/dep/eelgrass/eelgrass_map.htm
MADMF Recommended Time of Year Restrictions Document
http://www.mass.gov/eea/docs/dfg/dmf/publications/tr-47.pdf
Massachusetts Bays National Estuary Program
http://www.mass.gov/eea/agencies/mass-bays-program/
Buzzards Bay National Estuary Program
http://buzzardsbay.org/
Massachusetts Division of Marine Fisheries
http://www.mass.gov/eea/agencies/dfg/dmf/
Massachusetts Office of Coastal Zone Management
http://www.mass.gov/eea/agencies/czm/

Rhode Island
Eelgrass maps
http://www.savebay.org/file/2012_Mapping_Submerged_Aquatic_Vegetation_final_report_4_2013.pdf
Narraganset Bay Estuary Program
http://www.dem.ri.gov/programs/benviron/water/wetlands/wetldocs.htm
Rhode Island Division of Marine Fisheries
http://www.dem.ri.gov/
Rhode Island Coastal Resources Management Council
http://www.crmc.ri.gov/

Connecticut
Eelgrass Maps
https://www.fws.gov/northeast/ecologicalservices/pdf/wetlands/2012_CT_Eelgrass_Final_Report_11_26_2013.pdf
Long Island Sound Study
http://longislandsoundstudy.net/
CT GIS Resources
http://www.ct.gov/deep/cwp/view.asp?a=2698&q=323342&deepNav_GID=1707
CT DEEP Office of Long Island Sound Programs and Fisheries
http://www.ct.gov/deep/
CT Bureau of Aquaculture Shellfish Maps
http://www.ct.gov/doag/cwp/view.asp?a=3768&q=451508&doagNav=
CT River Watershed Council
http://www.ctriver.org/

New York
Eelgrass report
http://www.dec.ny.gov/docs/fish_marine_pdf/finalseagrassreport.pdf
Peconic Estuary Program
http://www.peconicestuary.org/
NY/NJ Harbor Estuary
http://www.harborestuary.org/

New Jersey
Submerged Aquatic Vegetation mapping
http://crssa.rutgers.edu/projects/coastal/sav/
Barnegat Bay Partnership
http://bbp.ocean.edu/pages/1.asp

Delaware
Partnership for the Delaware Estuary
http://www.delawareestuary.org/
Center for Delaware Inland Bays
http://www.inlandbays.org/

Maryland
Submerged Aquatic Vegetation mapping
http://data.imap.maryland.gov/datasets/da64df6bd4124ce9989e6c186a7906a7_0
MERLIN
http://geodata.md.gov/imaptemplate/?appid=a8ec7e2ff4c34a31bc1e9411ed8e7a7e
Maryland Coastal Bays Program
http://www.mdcoastalbays.org/

Virginia
Submerged Aquatic Vegetation mapping
http://web.vims.edu/bio/sav/maps.html

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENVIRONMENT

NOTE TO FILE

Date: January 13, 2017

From: Kerry Ryan
Environmental Analyst
Bureau of Environment

Subject: Northwood
1832H-5

RE: Cultural Resources

This project is a culvert replacement project located on NH 132, approximately 1,500 feet south of Sandogardy Pond Road in Northfield. The project will replace existing failing 36" diameter twin culverts with a box culvert. The pre-cast box culvert will be approximately 4' high by 6' wide (one foot imbedded). All work will be contained within the existing Right-of-Way.

The project scope and aerial photographs were reviewed with the Department's Cultural Resources Program Manager, Jill Edelmann, and Cultural Resources Program Specialist, Sheila Charles, on November 28, 2016. A review of the NHDHR archaeological site inventory database and historic maps (i.e., the mid 19th century county map(s) and the 1892 Hurd map) was completed and any structures within the vicinity were researched further.

The proposed work has a limited footprint and work will not impact undisturbed areas. Further, the project does not propose work that will result in any noteworthy visual or aesthetic changes to the area.

For these reasons, it was determined that there are no concerns.

A Program Comment form for Common Post-1945 Concrete & Steel Bridges was compiled and signed on 11/29/2016.

If the scope of work changes or the Contractor proposes work in previously undisturbed areas, the Bureau of Environment will review the changes prior to construction.

US Army Corps of Engineers
New England District

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	x	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	x	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		x
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	x	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	x	
2.5 The overall project site is more than 40 acres.		x
2.6 What is the size of the existing impervious surface area?	N/A	
2.7 What is the size of the proposed impervious surface area?	N/A	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	N/A	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)		x
3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	x	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		x
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		x
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	x	

4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		x
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		N/A
5. Historic/Archaeological Resources		
If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?**	x	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Northfield: NH Route 132 over Cross Brook

Construction Sequence

1. The road needs to remain open to one way traffic so removal and replacement of the existing culvert will be done one half at a time.
2. Install temporary erosion control measures.
3. Remove one half of the existing twin 36" pipes. Any flow will be diverted through the remaining portion of the pipes using sand bags.
4. Prep and install one half of the 4'x8' pre-cast box culvert and backfill back up to road grade.
5. Shift traffic to opposite lane.
6. Remove remaining existing pipe
   (may be necessary to install a short bypass pipe to keep excavation dry while installing the second half of the culvert.)

7. Install remaining portion of box culvert.
8. Backfill remainder of box culvert and open roadway to two way traffic.
9. Prep gravel road surface and pave.
10. Re-grade, loam and seed disturbed areas.
11. Remove temporary erosion control when disturbed areas are stabilized.

Northfield 1832H-5

NH 132 south

NH 132 north

Downstream view from NH 132

Downstream side

Downstream

General view, downstream side, facing north

Second set of twin culverts further downstream

Outlet side, north bank, riprap

Outlet side, south bank rip rap

Inlet side

Inlet side, general view

Looking upstream

Location 1 (50')

Location 2 (100')

Adjacent culverts, downstream of project location, obvious perch, under nearby driveway

NORTHFIELD 1832-H5

TYPE OF VETLAND IMPACT	PERMANENT IMPACT
N.H.V.B. (NON-VETLAND)	
N.H.V.B. & A.C.O.E. (VETLAND)	

N.H.V.B. - NEW HAMPSHIRE VETLANDS BOARD
A.C.O.E. - ARMY CORP. OF ENGINEERS

VETLAND DESIGNATION NUMBE

VETLAND IMPACT LOCATION

VETLAND MITIGATION AREA

TEMPORARY IMPACTS

MITIGATION

OHW ORDINARY HIGH VATER

TOB TOP OF BANK

TB TIDAL BUFFER ZONE

TOBOHW TOP OF BANK & ORDINARY HIGH VATER

SHOWN SMALLER THAN ACTUAL SIZE

VETLAND DESIGNATION	USFWS VETLAND CLASSIFICATION	LOCATION	AREA (S.F.)		
			N.H.V.B. (NON-VETLAND)	N.H.V.B. & A.C.O.E. (VETLAND)	TEMPORARY IMPACTS
1	BANK	A	127		118
2	R2UB12	B		185	78
3	PF01E	C			80
		D			
		E			
		F			
		G			
		H			
		I			

PERMANENT IMPACTS: 312 S.F.
TEMPORARY IMPACTS: 276 S.F.

TOTAL IMPACTS: 588 S.F.

copy

Standard Dredge and Fill
M313 Northfield
March 28, 2018
By: W. Rollins

Project Description:
Remove existing 36" culverts and install a new pre-cast 4' x 8' box culvert imbedded 12" to provide a natural bottom.

10T
bell 1145
penh
60
117

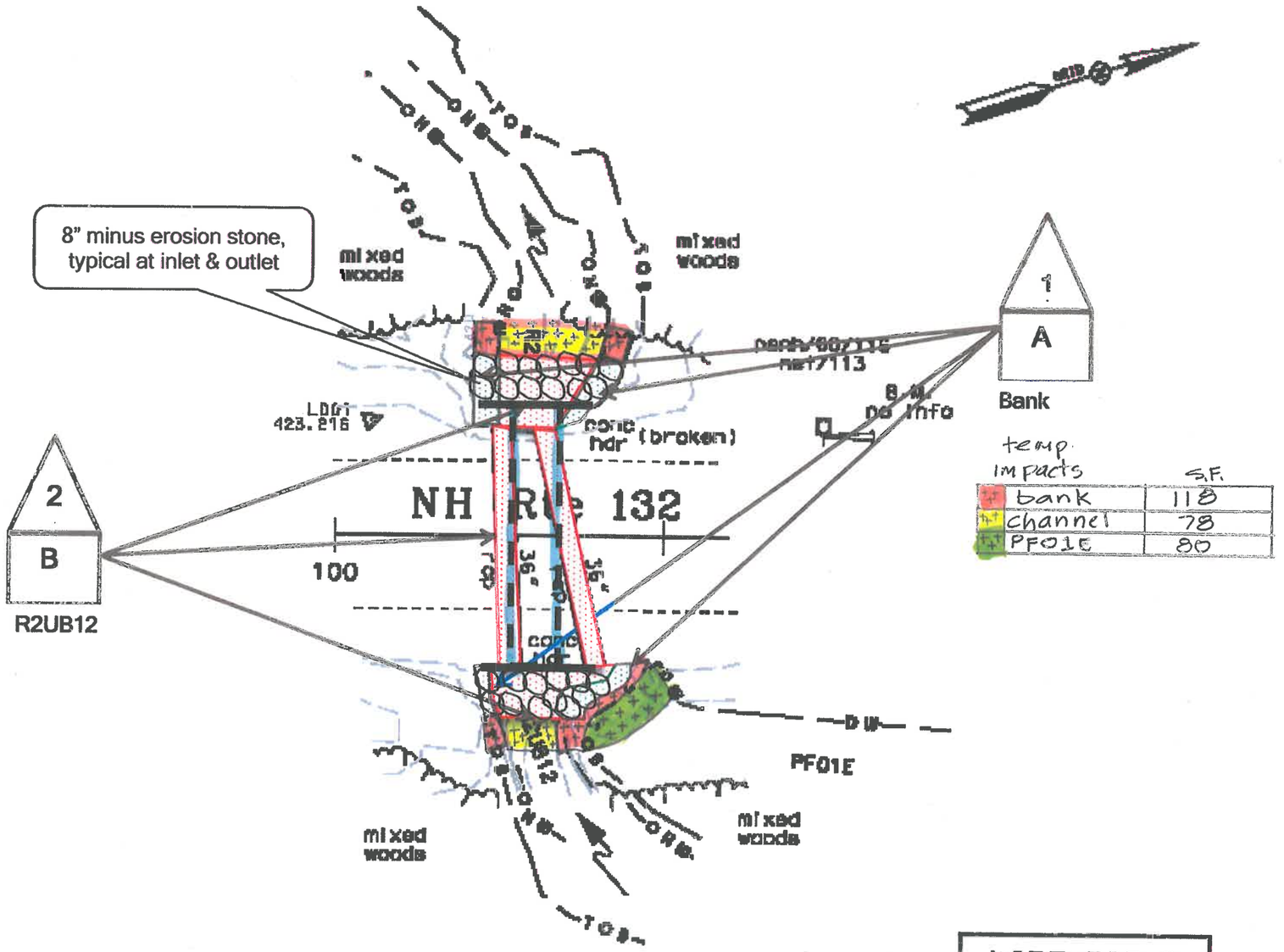
Erosion Control Plan

Work to be completed during low flow conditions. Sandbags will be used to divert flow into bypass pipe during construction. Silt fence will be installed to prevent erosion and silt migration.

Disturbed areas will loamed and seeded and will remain in place until disturbed areas are re-vegetated.

bell 1145
penh
60
117S

20 0 20 40
SCALE IN FEET



NORTHFIELD
1832-H5
PLAN PREPARATION RECORD PLAN